

Claims:

1. A network spanning heterogeneous call center controller for use with a circuit-switched private branch exchange and a packet-switched private branch exchange, the network spanning heterogeneous call center controller comprising:

a circuit-switched private branch exchange interface to communicate with the circuit-switched private branch exchange;

a packet-switched private branch exchange interface to communicate with the packet-switched private branch exchange; and

a processor coupled to the circuit-switched private branch exchange interface and to the packet-switched private branch exchange interface.

2. The network spanning heterogeneous call center controller of claim 1, wherein the circuit-switched private branch exchange interface sends circuit-switched instruction messages to the circuit-switched private branch exchange and where the packet-switched private branch exchange sends packet-switched instruction messages to the packet-switched private branch exchange.

3. The network spanning heterogeneous call center controller of claim 2, wherein the circuit-switched

3 instruction messages include a message to transfer a circuit-  
4 switched call to a selected agent terminal.

1 4. The network spanning heterogeneous call center  
2 controller of claim 3, wherein the agent terminal is coupled  
3 to the circuit-switched private branch exchange.

1 5. The network spanning heterogeneous call center  
2 controller of claim 3, wherein the packet-switched  
3 instruction messages include a message to transfer a voice  
4 over internet protocol call to an internet enabled agent  
5 terminal.

1 6. The network spanning heterogeneous call center  
2 controller of claim 5, wherein the internet enabled agent  
3 terminal is connected to the packet-switched private branch  
4 exchange.

1 7. The network spanning heterogeneous call center  
2 controller of claim 2, wherein the circuit-switched  
3 instruction messages includes a message to place a circuit-  
4 switched call in a call queue.

1 8. The network spanning heterogeneous call center  
2 controller of claim 2, wherein the circuit-switched  
3 instruction messages includes a message to apply a telephony  
4 resource to a circuit-switched call.

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1 9. The network spanning heterogeneous call center  
2 controller of claim 8, wherein the telephony resource  
3 comprises a message to apply music on hold call treatment.

1 10. The network spanning heterogeneous call center  
2 controller of claim 3, wherein the circuit-switched call is a  
3 circuit switched voice call transmitted over the public  
4 switched telephone network.

1 11. The network spanning heterogeneous call center  
2 controller of claim 1, further comprising a network manager  
3 interface, the network manager interface responsive to the  
4 processor.

1 12. The network spanning heterogeneous call center  
2 controller of claim 11, further comprising a network manager  
3 console coupled to and responsive to the network manager  
4 interface.

1 13. The network spanning heterogeneous call center  
2 controller of claim 11, further comprising a peripheral  
3 interface, the peripheral interface coupled to the circuit-  
4 switched private branch exchange interface, the packet-  
5 switched private branch exchange interface, and to the  
6 processor.

1        14. The network spanning heterogeneous call center  
2 controller of claim 13, further comprising a memory, the  
3 memory coupled to the processor via a bus, the memory  
4 containing a plurality of network spanning heterogeneous  
5 command and control instructions.

1        15. The network spanning heterogeneous call center  
2 controller of claim 13, further comprising a database, the  
3 database containing a plurality of call records created for a  
4 plurality of calls serviced by network spanning heterogeneous  
5 call center controller.

1           16. The network spanning heterogeneous call center  
2 controller of claim 15, wherein a first set of the data  
3 records are created for a first set of agents, and a second  
4 set of the data records are created for a second set of  
5 agents.

1           17. The network spanning heterogeneous call center  
2 controller of claim 16, wherein the first set of data records  
3 contain a data entry indicating service for a first company  
4 and the second set of data records contain a data entry  
5 indicating service for a second company.

1           18. The network spanning heterogeneous call center  
2 controller of claim 15, wherein the database is  
3 communicatively coupled to the processor.

1 19. A method of operating a network spanning call center  
2 controller that couples to both a circuit-switched private  
3 branch exchange and to a packet-switched private branch  
4 exchange, the method comprising:

5 receiving an indication that a circuit-switched call has  
6 been received by the coupled circuit-switched private branch  
7 exchange; and

8 communicating an instruction message to transfer the  
9 call to an agent terminal coupled to either the circuit-  
10 switched private branch exchange or to the Public Switched  
11 Telephone Network coupled to the circuit-switched private  
12 branch exchange.

1 20. The method of claim 19, further comprising:

2 selecting a telephony resource to be applied to the  
3 circuit-switched call; and

4 applying the selected telephony resource to the circuit-  
5 switched call.

1 21. The method of claim 19, further comprising:

2 monitoring the call for a call interrupt; and

3 upon detecting a call interrupt, placing the call into a  
4 call queue.

1 22. The method of claim 19, further comprising placing  
2 the call into a call queue prior to transferring the call to  
3 the agent terminal.

1 23. The method of claim 19, further comprising creating  
2 and storing a call record.

1 24. The method of claim 19, further comprising:  
2 receiving an indication that a voice over internet  
3 protocol call has been received by the coupled packet-  
4 switched private branch exchange; and  
5 communicating an instruction message to the coupled  
6 packet-switched private branch exchange to transfer the voice  
7 over internet protocol call to a packet-switched enabled  
8 agent terminal coupled to the packet-switched private branch  
9 exchange.

1 25. The method of claim 24, further comprising  
2 providing data services to a call originator of the voice  
3 over internet protocol call.

1 26. The method of claim 24, further comprising providing  
2 data resources to an internet enabled agent terminal  
3 servicing the voice over internet protocol call.

1 27. The method of claim 26, wherein the data resources  
2 are selected from the group consisting of web page content,  
3 and call processing menus.

1 28. The method of claim 26, wherein the data resources  
2 comprise electronic mail.

1 29. A network spanning heterogeneous call center  
2 controller comprising:

3 a public switched telephone network input;

4 an internet connection input;

5 a switching element responsive to the public switched  
6 telephone network input;

7 an internet protocol interface responsive to the  
8 internet connection input;

9 a telephony resource module connectable to the switching  
10 element;

11 a processor, the processor coupled to a data bus, the  
12 data bus coupled to the internet protocol interface and the  
13 switching element;

14 a first set of agent output channels responsive to the  
15 switching element, the first set of agent output channels  
16 directed to communicate with circuit switched agent  
17 terminals; and

18 a second set of agent output channels responsive to the  
19 internet protocol interface, the second set of agent output

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20 channels directed to communicate with internet enabled agent  
21 terminals.

1 30. The network spanning heterogeneous call center  
2 controller of claim 29, further comprising a data resources  
3 module to provide selected data resources via the internet  
4 protocol interface.

1 31. The network spanning heterogeneous call center  
2 controller of claim 29, further comprising a domain  
3 conversion module, the domain conversion module to convert  
4 between internet protocol traffic and circuit switched voice  
5 traffic, the domain conversion module responsive to the  
6 internet protocol interface.

1 32. A network spanning heterogeneous call center  
2 comprising:

3 a circuit-switched private branch exchange;

4 a packet-switched private branch exchange;

5 a network spanning heterogeneous call center controller;

6 a first control path connecting the circuit switched  
7 private branch exchange and the network spanning  
8 heterogeneous call center controller;

9 a second control path connecting the packet-switched  
10 private branch exchange and the heterogeneous call center  
11 controller; and

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12 a network, the network responsive to the circuit-  
13 switched private branch exchange, the packet-switched private  
14 branch exchange, and to the heterogeneous call center  
15 controller, the network having a plurality of output  
16 communication channels for connection to a plurality of agent  
17 terminals.

1 33. The network spanning heterogeneous call center of  
2 claim 32, further comprising a voice channel between the  
3 circuit switched private branch exchange and the network, a  
4 control channel between the network spanning private branch  
5 exchange call controller and the network, and a voice and  
6 data channel between the internet based private branch  
7 exchange and the network.

1 34. A method for operating a network spanning  
2 heterogeneous call center controller with a circuit-switched  
3 private branch exchange and a packet-switched private branch  
4 exchange, the method comprising:

5 receiving a circuit-switched call event from the  
6 circuit-switched private branch exchange;

7 receiving an internet protocol call event from the  
8 packet-switched private branch exchange; and

9 processing the circuit-switched call event and the  
10 internet protocol call event responsive to the circuit-  
11 switched private branch exchange and responsive to the  
12 packet-switched private branch exchange.

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1 35. The method of claim 34, further comprising sending a  
2 circuit-switched instruction message to the circuit-switched  
3 private branch exchange and sending an internet protocol  
4 instruction responsive to the packet-switched private branch  
5 exchange.

1 36. The method of claim 35, wherein the circuit-switched  
2 instruction message is a call transfer message and wherein a  
3 call from the circuit-switched private branch exchange is  
4 routed to a selected agent device in response to the circuit-  
5 switched instruction message.

1 37. The method of claim 35, wherein the internet  
2 protocol instruction message is a call transfer message and  
3 wherein call data from the internet based private branch  
4 exchange is routed to a selected internet enabled agent  
5 device in response to the internet protocol instruction  
6 message.